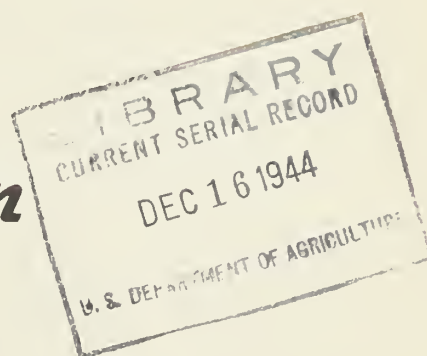


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Cooperative Purchasing of Seed in Relation to Crop Production



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FARM CREDIT ADMINISTRATION
U. S. DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

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FOREWORD

Farmers at all times should be able to obtain the seed best suited to their crop production enterprises. To have available the best seed possible they must: (1) know variety specifications for specific purposes and growing environments; and (2) they must procure such seed. They must depend partly or entirely on outside sources for both the information and the procurement service.

The 2,500 cooperatives that provide seed purchasing service for approximately 1½ million farmers have a unique opportunity to help farmers produce better crops by providing the right seed and the right information. It is a real challenge to the managements of these associations to find ways and means of improving further their service to farmers purchasing seeds.

For the benefit of those interested in the possibilities of such a cooperative service, this publication presents a discussion of the development and present status of cooperative seed purchasing operations.

Harold Hedges, Acting Chief
Cooperative Research and Service Division

COOPERATIVE PURCHASING OF SEED IN RELATION TO CROP PRODUCTION

by Thomas E. Hall
Agricultural Economist

Buying seed cooperatively helps farmers grow better crops by building a service that gives them the best seeds available for their individual environments and purposes. It gives them a business operated by seedmen of highest integrity and it gives them a seed service of maximum value as measured by its usefulness in serving their needs.

Purchasing for maximum seed utility value requires greater technical knowledge than many other commodity purchasing services. At the same time, volume of seed purchases are often small compared with that of some other farm production supplies.

For these reasons, the cooperative purchasing of seeds often has not received the attention it merits from the standpoint of its importance to the growing of good crops. On the other hand, farmers have built a substantial number of cooperatives that do provide them with outstanding seed purchasing service.

The aim of this study, therefore, is to point out the experiences, operating methods, and policies of those cooperatives with outstanding seed purchasing departments and to give a general picture of their present status. It is believed that this information will help improve and expand cooperative purchasing of seed, thus helping to contribute to better crop production.



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Figure 1. - Location of the regional cooperatives that operate seed purchasing departments from which information used in this study was obtained

Information was obtained from 23 regional associations. Eighteen of the 23 were visited and operating problems and practices discussed with the managements. Figure 1 shows the locations of the 23 associations and table 1 gives their names, addresses, types of service, and classes of seed handled.

Local cooperatives purchasing seed were not contacted during this particular survey. The information presented on local services is based on close observation of the operations of approximately 175 local cooperatives made by the writer while employed by a regional cooperative during the period 1936 to 1943, and supplemented by information obtained from the regional cooperatives visited.

IMPORTANCE OF GOOD SEED TO FARMERS

Man could not continue to exist without seeds for the reproduction of plant life. Seeds are not only necessary to continued existence, but they produce plants that, together with soil and climate, largely determine man's economy in a given community, State, or nation. It is, therefore, little wonder that the search for seeds that will contribute more to man's welfare has been and will be unending. Farmers are most closely associated with seed use for economical plant production and, therefore, are vitally interested in finding and obtaining seed to improve their crop production. Those primarily engaged in crop production are directly interested. Those whose farm enterprise is primarily the production of eggs, meat, wool, or milk are indirectly interested from the standpoint of feed and pasture for their livestock or poultry.

The search for better seed for specific purposes and conditions of crop production is conducted by two groups of people, the scientist and others interested in plant breeding and selection, and the farmer who is looking for seed for next year's crop. The scientist is trying to find or help create new and better varieties or strains of plants. The farmer is trying to find from varieties or strains available the seed that will best serve his farm enterprise.

Nearly every farmer in the United States purchases some seed each year. It may be only a small purchase for garden planting or, at the other extreme, a large quantity for all crops planted. His yearly purchase may be relatively small compared with the value of the anticipated crops, even when he buys all the seed he plants. For each dollar's worth of seed planted, he may reasonably expect from \$5 to many times that amount of crop value. The actual returns vary greatly not only because of price fluctuations and kinds of crops but also because of various climatic and soil conditions. At any rate, a dollar's worth of poor seed planted may result in no crop at all and a loss to the farmer of many times his seed cost; or it may mean less return than was reasonably expected for the crop had the best seed been used. Such losses can be charged to inferior seed.

The loss farmers in the United States take in lower crop production, unproductive effort, and out-of-pocket expense from the use of inferior seed is estimated to be several hundred million dollars annually. It is probably more than the total cost of all seed planted annually.

This estimate includes losses resulting from weed seed being mixed with crop seed, those from planting seed not best adapted to environment and purpose, and those from using seed that germinates poorly or not at all. Other losses involved are those caused by plant disease that an inexpensive seed treatment could have prevented or minimized, and by failure to inoculate legume seed which resulted in lower legume crop yields and less nitrogen fixation in the soil.

Table 1. - Names, addresses, types of seed service, and principal kinds of seed handled, for 23 of the regional cooperatives that provide seed service

Organization	Address	Type of seed service	Principal kinds of seed handled
Arkansas Central Co-operative Association, Inc.	Little Rock, Ark.	Purchasing	All types of seed generally adapted to area
Farmers Marketing and Exchange Association	Montgomery, Ala.	Purchasing	Winter cover crop, legumes, and grass seed
Indiana Farm Bureau Cooperative Association	Indianapolis, Ind.	Purchasing	All kinds of seed adapted to area
Farmers State Exchange	Pineville, La.	Purchasing	All kinds of seed adapted to area
Eastern States Farmers Exchange	Springfield, Mass.	Purchasing	All kinds of seed adapted to area
Farm Bureau Services, Inc.	Lansing, Mich.	Purchasing	All kinds adapted to area except seed potatoes
Midland Cooperative Wholesale	Minneapolis, Minn.	Purchasing	Legumes, grass, and some field seed
Land-O-Lakes Creameries, Inc.	Minneapolis, Minn.	Purchasing Marketing	Grass, legumes, and some field seed Sweet clover, some legumes, and grass seed - Thief River Falls Plant
Farmers Union Central Exchange	St. Paul, Minn.	Purchasing	Legumes, grass, and some field crop seed
Mississippi Federated Cooperatives	Jackson, Miss.	Purchasing	Winter cover crop, grass, legumes, and field crop seed
Missouri Farmers Assn. Milling Company	Springfield, Mo.	Purchasing	Legumes, grass, and field crop seed
Farmers Union State Exchange	Omaha, Nebr.	Purchasing	Grass and some field crop seed
Cooperative G.L.F. Exchange	Buffalo, N. Y.	Purchasing Marketing	All kinds of seed adapted to the area Seed beans
Farmers Cooperative Exchange, Inc.	Raleigh, N. Car.	Purchasing Marketing	All kinds of seed adapted to area Lespedeza seed
Farm Bureau Cooperative Association	Columbus, Ohio	Purchasing	All kinds of seed adapted to area
Ohio Farmers Grain and Supply Association	Fostoria, Ohio	Purchasing	Grass, legumes, and some field crop seed
Pennsylvania Farm Bureau Cooperative Association	Harrisburg, Pa.	Purchasing	All seed adapted to area, except vegetable seed
South Dakota Wheat Growers Association	Aberdeen, S. Dak.	Purchasing	Grass, legumes, and some field crop seed
Southern States Cooperative, Inc.	Richmond, Va.	Purchasing	All kinds of seed adapted to area
Washington Cooperative Egg and Poultry Association	Seattle, Wash.	Purchasing Marketing	All seed adapted to area Vegetable seed
Pacific Supply Cooperative	Walla Walla, Wash.	Purchasing Marketing	All kinds of seed adapted to area Winter cover crop, legumes, and grass seed
Wisconsin Cooperative Farm Supply Company	Madison, Wis.	Purchasing	Legumes, grass, and field crop seed
Central Cooperative Wholesale	Superior, Wis.	Purchasing	Legumes, grass, and some field crop seed

All these losses afford adequate proof of the old saying that "poor seed is the most expensive seed." And they help explain the vital concern farmers have in getting seed best fitted for their needs. So, to get suitable seed, many farmers decided to perform this business service for themselves through cooperative organizations.

DEVELOPMENT OF COOPERATIVE SEED PURCHASING

Records of the first cooperative seed purchasing service are not available. Prior to 1910, however, it was the practice in many communities for farmers to pool their orders for carlots, frequently placing such orders through local farm supply associations.

Until the expansion of cooperative purchasing during and immediately following World War I, these pooled orders were the common forms of cooperative seed purchasing. Then it was that the local cooperatives and farmers began organizing regional cooperatives to help on their problem of purchasing various farm supplies including seeds. The help of these regionals has been especially significant in the development of the present completely cooperative seed service. This service at present in several States includes the best in personnel equipment and facilities for processing, producing under contract when practical, and distributing to farmers through local cooperatives seeds having the highest utility value (figure 2).

TRADE CONDITIONS AND PRACTICES

The start of regional seed purchasing was probably accelerated by a situation along the Atlantic coast and in the Middle West. For years, many millions of pounds of clover and alfalfa seed were imported from Europe, South America, and South Africa, and distributed up and down the Atlantic coast and in the Middle West. Farmers were finding it impossible to grow alfalfa and clover successfully. They thought the failures were due to diseases and insects, but agricultural experiment stations definitely proved that the failures were caused by using seed with undesirable inheritance. Such seed produced plants not adapted to the soil and climatic conditions.

This practice of importing alfalfa and clover seed without informing farmers of its origin went on for years. It was very profitable to certain importers and seedsmen, but it became a strong factor in motivating farmers to set up cooperative regional seed purchasing services. Cooperative G.L.F. Exchange of Buffalo, New York, began its successful seed purchasing service in 1918; the Farm Bureau Services, Inc., of Lansing, Michigan, in 1919; Eastern States Farmers' Exchange, Springfield, Massachusetts, and Mississippi Federated Cooperative of Jackson, Mississippi, in 1922; and Southern States Cooperative of Richmond, Virginia (then called Virginia Seed Service) in 1923.

Immediately after these cooperative seed services began procuring seed adapted to growing conditions in their territories, farmers who previously had failed with alfalfa and clover began harvesting successful crops.

As just mentioned, trade conditions were important factors in cooperative seed service development. These seed services did not "just grow." Rather, their development has been and is the result of definitely planned effort on the part of farmers and farm leaders to provide a service to overcome the objectionable conditions and practices found in parts of the commercial seed industry, such as:

1. Failure to procure varieties and strains best adapted to the environments and purposes of crop production for a given trade territory.



Figure 2.-(A) Southern States Cooperative, Richmond, Virginia, began operations on one leased floor of this building in 1923, as the Virginia Seed Service.



(B) One of several seed and farm supply service warehouses now operated by Southern States.

2. Misrepresentation of the facts about seed varieties, germination, purity, origin, weed seed, and other factors constituting seed value, as measured by use for specific environments and purposes.
3. Unreasonable charges for the service of purchasing seed.

COOPERATIVES ELIMINATE UNDESIRABLE PRACTICES

Cooperatives provide a means for eliminating these undesirable trade conditions and practices. Owned by and operated for service to the farmers themselves, cooperatives follow the general operating policies laid down by the farmers. Thus, as the owners are also the patrons every effort is made to get seed of known origin and heredity, germination, purity, and freedom from weed seed.

All this is done without excessive service charges because there is no incentive for the farmers to charge themselves more than is justified.

Cooperatives have also taken the lead in protecting the seed purchaser against misrepresentation about seed characteristics by supporting legislation such as the Federal Seed Act and State seed laws. With such legislation, buyers have greater assurance that they are getting the kind of seed described by the label or tag.

FARMERS MAY PRODUCE THEIR OWN SEED

Granted then that the cooperatives have helped to eliminate some of the objectionable practices in the commercial seed industry, to what extent do farmers purchase seed? What are the conditions under which he will use his cooperative to procure seed rather than use his own seed production?

The farmer is both a producer and a consumer of seed. Moreover, he uses the seed in the same form in which it is produced. All services necessary to prepare wheat for feed, flour, or bread, for example, are unnecessary if the wheat is to be used for seed. This characteristic of seed limits the number and types of services required between the producer and the consumer. Furthermore, it makes it easy for a farmer to produce seed for his own use or to buy from a neighbor. This, therefore, may limit his need for a cooperative seed purchasing service.

On the other hand, there are several reasons why the farmer may consider it to his advantage to use a seed purchasing service. Mr. George C. Edler¹ summarizes the principal reasons:

1. His field may be foul with noxious weeds;
2. Soil, climate, and other conditions on the farm may be unfavorable for seed production in a given year
3. Altitude, latitude, or rainfall in his locality may preclude the production of seed in any 1 year;
4. He may be able to buy better seed at a lower cost than can be produced in his locality;
5. He may find it more profitable to grow a crop for hay or forage purposes than for seed production;

¹Edler, George, C. Seed Marketing Hints for the Farmer. U. S. Dept. Agr. Farmers Bul. 1232. 1935. 31 pp.

6. He may not have the facilities for harvesting, cleaning, curing, or otherwise preparing his seed for planting purposes;
7. He may need seed of a crop that has not been grown by him for several years, if ever at all;
8. He may have to replant his fields, either with the same kinds of seed (his supply of which may have been exhausted with the first planting) or with seed of some catch crop.

Then, too, as farming becomes more specialized and mechanized, the percentage of farmers purchasing seed instead of growing their own will increase. The type of farming will influence this trend as the percent using their own seed production will be limited more and more to those farmers with the best equipment and natural conditions for seed production

Table 2 shows the source of farmers' seed supply for five sections of the United States. It illustrates the fact that natural conditions for seed production and the type of farming practiced in different sections are major factors in influencing the percentages of seed procured from owners' farms, from other farmers, or from dealers, and in accounting for the variations between sections.

PRESENT STATUS OF COOPERATIVE PURCHASING OF SEED

Present operations of local and regional cooperatives are based on many years of successful experience. Much credit for the present "know how" in seed purchasing is due the Cooperative G.L.F. Exchange; the Farm Bureau Service of Lansing, Michigan; Southern States Cooperative; Eastern States Farmers Exchange; and Mississippi Federated Cooperatives for their pioneer efforts and year-by-year demonstration of progressive successful service. Each of these five regional cooperatives has at least 20 years' experience back of its present operations.

Table 2. - Normal sources of seed supply in States of specified groups

Kind of seed and source	Eastern States	Southern States	Central States	Northern States	Far Western States
	<i>Percent</i>				
Grasses:					
Own farm.....	5	6	23	69	4
Other farms.....	2	4	12	13	2
Dealers.....	93	90	65	18	94
Clovers and alfalfa:					
Own farm.....	6	11	30	18	12
Other farms.....	3	5	18	16	9
Dealers.....	91	84	52	66	79
Milletts:					
Own farm.....	3	12	20	13	7
Other farms.....	1	6	11	10	3
Dealers.....	96	82	69	77	90
Forage sorghums:					
Own farm.....	1	36	25	5	16
Other farms.....	0	13	12	5	18
Dealers.....	99	51	63	90	66
Small grains:					
Own farm.....	44	45	76	78	59
Other farms.....	122	15	15	14	15
Dealers.....	44	40	9	8	26

Source: Data from Edler, George C. Seed Marketing Hints For the Farmer. U. S. Dept. Agr. Farmers' Bul. 1232. 31 pp. 1935.

Figure 3 shows the period when present operations were started for the 23 regional cooperative seed purchasing services included in this study. While the 7 that were started since 1940 have had relatively little actual experience of their own, they each have no doubt had some help directly or indirectly from older services.

SEED PURCHASING ONLY ONE PHASE OF COOPERATIVE'S SERVICES

Nearly all of the cooperatives studied handled other lines of business with seed purchasing as a secondary service. As a general rule, cooperatives whose primary services were marketing various farm products or purchasing farm supplies showed a relatively small seed business in comparison with their total dollar volume.

Exceptions to this rule among regional cooperatives were the Mississippi Federated Cooperative, of Jackson, Mississippi, and the Farmers Marketing and Exchange Association, of Montgomery, Alabama. In their case, volume of seed purchased was larger than that of any other farm supply handled. This situation also existed among many of the local cooperatives in the South where farmers purchased winter cover crop seed extensively.

Three cooperatives handling hybrid seed corn only were also exceptions to the rule that seed purchasing was secondary. These associations were Producers Crop Improvement Association, Pipe City, Illinois; Blackhawk Cooperative Hybrid Seed Corn Association, Polo, Illinois; and Farmers Union Cooperative Seed Service, Des Moines, Iowa.

Although seed volume represents a relatively small part of total farm supplies purchased by most regionals with the exceptions given above, it is sometimes large compared with average volume in the commercial seed industry. For example, 9 of the 23 regionals studied expect their combined seed purchases for the crop year 1943-44 to exceed 10 million dollars. Three of the 9 expect their seed purchases to exceed 1-3/4 million dollars. Each of the 9 will have seed purchases of at least 1/2 million dollars. Yet these purchases will constitute less than 15 percent of total farm supplies bought by any 1 of the 9 regional cooperatives and less than 8 percent of total purchases for each of the 3 regionals whose dollar seed volume exceeded 1-3/4 million.

STATUS OF LOCAL SEED PURCHASING

Currently, the estimate is that 50 percent of all the local grain marketing cooperatives and about 35 percent of all local farm supply purchasing cooperatives procure seed as one of the services of their farm supply purchasing department. Only a very small percentage of the total number of local dairy, livestock, cotton, fruit, or vegetable marketing cooperatives handle any seed. Of the total number of local

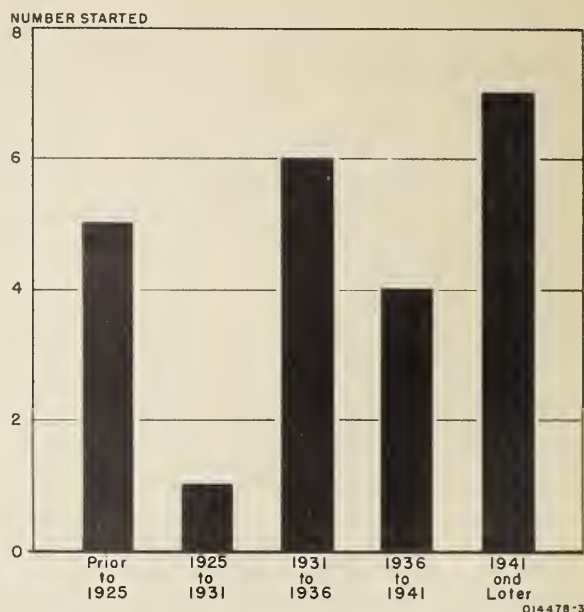


Figure 3. - Number of the associations studied that were started in each of five periods.



Figure 4. - Cooperative supply services frequently list seeds and other items in advertising on their warehouses or office buildings.

cooperatives marketing farm products and/or purchasing farm supplies, about 2,500 purchase seed for farmers.² These 2,500 local cooperatives serve at least 1-1/2 million farmers. Such business signs as shown in figure 4 are common evidence of the extent of the local cooperative seed service activity throughout most sections of the United States.

Present Responsibilities and Opportunities

Under the present operating relationship between regional and local cooperatives, the locals' activities are the grass roots of all seed purchasing service. They deal directly with individual farmers and can personally present the service to them.

In the first place, farmers hold the local management directly responsible for getting seed best adapted to the local farms. This entails both expense and a considerable knowledge of the commodity. Managers must know what seed to buy. That means they must take into account soil, climatic, and other environmental production conditions as well as the purpose for which the crop is to be grown. It means they must know the inherent and physical specifications of various kinds of seed to produce crops, as determined by unbiased production tests, in order to accurately judge their value-in-use under local conditions. It means they must know sources of supply, prices, and markets. And if the local attempts to procure seed directly from the best available production areas, it may mean considerable time and expense in travel which a small volume of business cannot justify.

In the second place, providing information to farmers requires still more specialized and technical background. Farmers like to have local managements answer their questions regarding (1) merits of various seed strains or varieties for specific production environments and purposes, (2) the advisability of seed treatment or inoculant and the kind to use for best results, (3) seed usage, such as rate, date, and depth of planting, and (4) cultural practices, such as seed bed preparation, fertilizer application, cultivation practices, harvesting method, and so forth.

Correct answers to such questions build confidence and patronage and farmers who consistently get both the right seed and the correct information appreciate the service.

Need for Regional Service

As previously mentioned, seed purchasing is only one of several services performed by the local cooperative. Actually, a manager or other employee responsible for the service often cannot devote more than a minor portion of his time to seed. Furthermore, the seed volume at the local community level is rarely, if ever, sufficient to justify specialized processing facilities or employment of an experienced seedsman. Therefore, the relatively small dollar volume and the nature and diversity of employees' duties make it impractical for a local cooperative operating independently, without the regional cooperative service, to make full use of its opportunities to serve its patrons.

²These estimates were based on several thousand reports filed by cooperatives with the Historical and Statistical Section of the Cooperative Research and Service Division of the Farm Credit Administration.

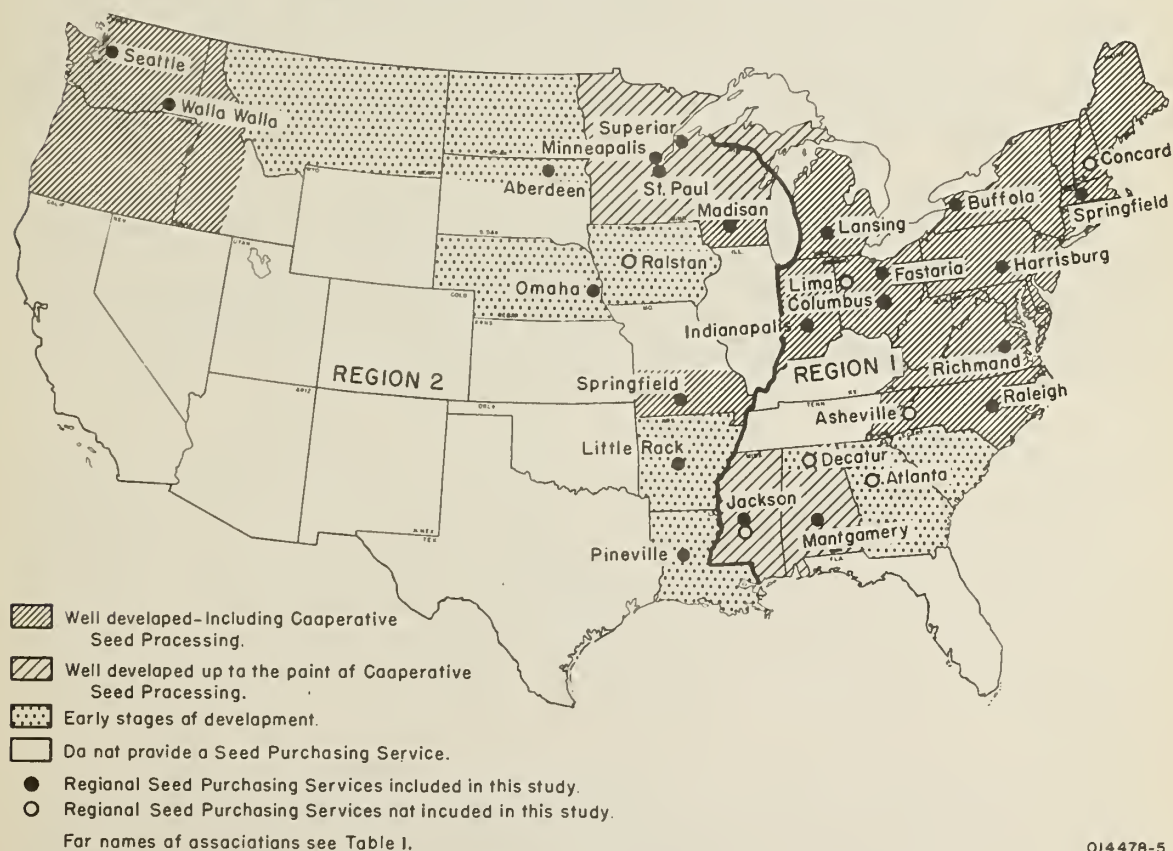
Under these conditions, locals necessarily have to depend on outside sources for facilities and technical information. Many kinds of seed cannot be purchased by local cooperatives directly from farmers, but must be procured through wholesalers or processors. These wholesalers or processors then must buy from local assemblers, who in their turn go back to farmers for the seed.

When seed is procured in this way, locals are necessarily dependent on the integrity of all the various handlers and must rely on them to give the best seed values possible. Sometimes under this arrangement, the locals find themselves getting poor seed unsuited for the farmers' particular environmental conditions and purposes.

Experience has demonstrated that their best assurance of getting satisfactory seed is to use their own regional purchasing service. The combined volume of business of the various local cooperatives served is usually sufficient to justify the efficient and economical use of specialized processing and procurement facilities and employment of men well trained for the work.

STATUS OF REGIONAL SEED PURCHASING

As of the first quarter of 1944, 30 regional cooperatives were known to be providing a seed purchasing service to local cooperatives affiliated with them. Twenty-three of the 30 were contacted in this study. A line drawn north and south through the United States along the western borders of Michigan, Indiana, Kentucky, Tennessee,



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Figure 5. - Indication of the extent of regional cooperative seed purchasing in the United States, 1944.

and Mississippi divides the country into two regions, each having an equal number of States. Figure 5 shows these two regions and indicates the extent of regional cooperative seed purchasing service development in each.

Of the 24 States in region 1, only Kentucky, Tennessee, and Florida do not have regional cooperative seed purchasing service available to local cooperatives as compared with 11 States in region 2. There are only 2 States in region 1 in which the regional seed purchasing service is in the early stages of development, as compared with 7 in region 2.

Region 1 has 13 seed processing plants operating in conjunction with various regional seed purchasing services. Cooperative G.L.F. and Southern States Cooperative each operate more than one plant. Region 2 has 4 such plants.

Older seed purchasing services are found in region 1. Probably a much smaller percentage of all farmers here raise and plant their own seed, due to type of farming and generally less favorable climatic conditions for seed production. In other words, the fact that the need for regional seed purchasing service has been more acute and the existing services more experienced largely accounts for the present difference in status between the two regions.

On the other hand, the most rapid expansion is occurring in region 2. Seven of the 23 regionals studied were started since 1940. All 7 are in region 2. Four in these Western and Midwestern States now consider starting seed purchasing services and some of those now operating are planning substantial expansion of their programs. This is evidence that the rate of expansion since 1940 may continue, particularly in view of the fact that a majority of all local cooperative grain elevator associations in region 2 are now purchasing seed for farmers and need regionals' support and help with the service.

Four of the 23 regionals studied are classed as marketing associations from the standpoint that their primary cooperative function is to market farm products. Mississippi Federated Cooperative markets cotton, Land-O-Lakes Creameries markets dairy products and legume seed, Washington Co-op Egg and Poultry Association markets poultry, eggs, and vegetable seed, and the South Dakota Wheat Growers is a grain marketing cooperative. Of course, each of these 4 marketing associations handles farm supplies other than seed through their respective purchasing departments.

The remaining 19 regionals are classed as purchasing associations since purchasing farm supplies is their primary function. Quite often feed and fertilizer or gas and oil products are the big volume commodities handled. Three of these associations have marketing departments in which seed is one commodity marketed. Cooperative G.L.F. Exchange markets seed beans; Farmers Cooperative Exchange markets lespedeza seed; and Pacific Supply Cooperative markets winter cover crop, grass, and legume seed. These kinds of seed are surplus seed crops in the respective territories so the seed service performs both a marketing and a purchasing service in these instances mentioned.

METHODS AND PRACTICES OF REGIONAL SEED SERVICE OPERATIONS

Regionals and locals together are a right combination to give a seed purchasing service of maximum usefulness to the farmer. However, both must aggressively and efficiently execute their respective functions and responsibilities. Since locals

cannot give the time and specialized attention necessary for the most effective service, the regionals have the opportunity and responsibility to increase the usefulness of the service by their own operating methods and practices.

To carry out such methods and practices, the regional seed purchasing department usually offers three main services.

First is the service to obtain facts regarding the best varieties and strains of seed for the various environments and purposes in the regional's territory. This entails a careful study of all available unbiased information. If such a study does not result in conclusive evidence regarding best varieties, it may be necessary for the regional to do some original research. As facts regarding relative seed value are compiled they are used as a basis for procuring seed and are made available in simple everyday language to the local communities to be passed on to the farmer or sent to the farmer direct. Thus, the first responsibility of the regional cooperatives is to know what seed to purchase.

The second service is acquiring seed for the cooperative distribution system. The present objective is an across-the-board purchasing service that does all necessary phases of seed handling from the producer to the consumer including seed processing and in some cases even contract production.

The third service is to operate the purchasing department as efficiently and economically as possible in order to bring about maximum value per dollar spent for seed by the local cooperative and in turn by the farmer.

Some specific examples will follow of outstanding regional operating policies and practices to give an insight into the quality and nature of the services farmers may expect from their own cooperative.

ASSEMBLING AND PRESENTING SEED FACTS

The first of the regional services, knowing what seed to purchase, how it should be used for best results, and what crop cultural practices are best for maximum production in the territory served is a big job. The degree to which this job is well done will materially influence the usefulness of the entire program to the farmers.

Regionals Assume Responsibility for Information

From the viewpoint that the job is primarily one of finding facts, it is research. However, it should not be concluded that all regionals find it practical or desirable to do any of the original research. Without exception their first practice is to review facts and information already available, particularly the results of research and study of various agricultural experiment stations that are of interest to the local cooperatives from the standpoint of their effort to aid the farmer with his crop production and that provide the best answers available to such questions as: What varieties will give best results under the various soil and climatic conditions generally prevailing in the territory served? From what region should seed be procured to obtain maximum resistance to disease and to give the best seed values as measured by use in specified territories? What treatments are effective and economical? Based on soil fertility, altitude, and latitude, what should be the rate and date of planting for different kinds of seed? At what depth should plantings be made and what kind of seedbed is best? When, at what rate, and how should fertilizer be applied for best

results for various crops and the different types of soil? What cultivation or tillage practices are considered best for different kinds of crops? What inherent character do seeds of various kinds have for disease, height, and nature of growth, resistance to lodging, resistance to heat, resistance to shattering, or any other characteristics which may affect value for a given purpose or purposes?

Experiment stations may already have, or may be working on the answers to the above and other questions. However, their research programs are limited. For this reason, Cooperative G.L.F. Mill, Eastern States Farmers Exchange, and Southern States Cooperative have for several years found it desirable to furnish experiment stations in their respective territories with research fellowships. These fellowships help the experiment stations do research on problems of special concern to cooperative seed service programs.

Some of the associations supplement the work of the experiment stations to the extent of actually conducting their own original research programs on seed sources, usage, and crop cultural practices. Pennsylvania Farm Bureau Cooperative Association found it necessary to conduct field tests of available hybrid and open pollinated field corn for 2 years before starting their hybrid corn purchasing service.

Eastern States Cooperative Exchange, Springfield, Massachusetts, hired a plant geneticist and had him grow and study vegetable seed from all available sources for 2 years before starting their vegetable seed purchasing service. Eastern States research program is outstanding. It includes a plant industry project, Feeding Hills, Massachusetts (figure 6); outlying plots, Westbrook Farm, Ellington, Connecticut; hybrid corn trials on members' farms; and sweet corn trials at Blue Bell, Pennsylvania. Eastern States defines the functions of their plant industry projects as -

1. A survey of plant material from world sources - varieties, strains, and seed sources tested;
2. Trials of all Eastern States vegetable seed lots in distribution - compared with stock seed and previous deliveries;
3. Breeding program for seed improvement - creating new material and trueing up old stocks;
4. Maintenance of stock seed - control of inherited type for propagation;
5. Seed production for distribution of special items for type control and those of small volume;
6. Miscellaneous investigations and services such as testing field stands vs. laboratory germination, testing chemicals for seed treatments, testing plant response to fertilizer placement, and testing chemicals for disease and insect control.



Figure 6. - Cucumbers get their "physical" inspection in trials at the Eastern States Farmers Exchange Plant Industry Project.

During 1941, there were 321 different lots of Eastern States seed and 433 lots from other sources planted to observe growth characteristics to maturity. There were 4,413 different lots under observation in breeding projects, corn nursery, and crossing fields. Seventy-three lots of improved stock seed were maintained for multiplication preparatory to distribution.

The Pennsylvania Farm Bureau Cooperative Association is doing outstanding research to develop a hybrid corn adapted to growing conditions in Pennsylvania. Preparatory to building a purchasing program for hybrid corn, they hired a specialist in 1938 to conduct a research program for hybrid corn utility value for farmers in the cooperative's trade territory. At that time the experiment station had not started such research. Field tests of various hybrids and open pollinated varieties were conducted on members' farms for 2 full years before the association began supplying its membership with hybrid seed corn. This work continues and is supplemented by selection and breeding work for the development of new and superior hybrid corn for use by the farmers served by Pennsylvania Farm Bureau Cooperative.

The foregoing examples of original research, beamed at maximum seed values, seed usage, and cultural practices, are exceptional, but they do illustrate the kind of research local cooperatives may obtain for themselves when seed volume is sufficient, through their regional associations. They further illustrate methods used by regionals to help locals secure more factual information as a basis for greater help to their patron's crop production programs.

Methods of Presenting Information

The job of presenting research findings in clear, concise, everyday language constitutes an important service regionals furnish local cooperatives and their farmer-patrons. As a matter of fact, regionals lead all others in the commercial seed industry in providing farmers with facts about seed and its use. This frank and open policy of giving all the information has been an important factor in dispelling a long-time practice of "let the buyer beware." A policy based on "keeping the buyer informed" is consistent with and necessary to a cooperative seed purchasing service.

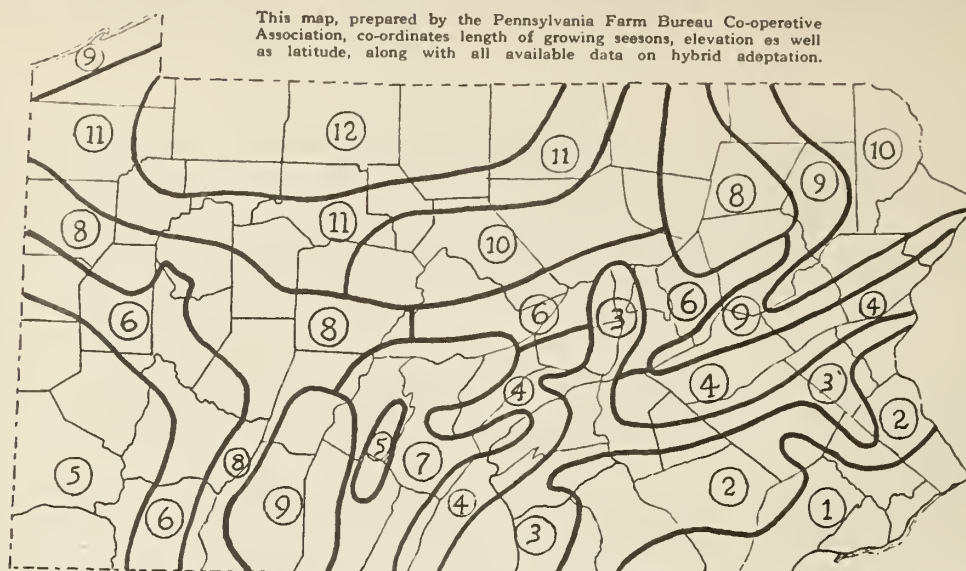
The results of investigations and research are made known to members through manuals and catalogs, mimeographed releases, timely articles in the house organ, posters, booklets and pamphlets, exhibits, demonstrations, meetings, and personal contacts. The methods vary according to the personnel and facilities available for the job. However, in all cases the purposes are the same and often the different methods are equally effective.

In the January 1943 issue of Southern States Patron, published by the Southern States Cooperative, Richmond, Virginia, an article entitled "Southern States Field Seed Selection Guide," presents information on all field seed handled by the association. It goes into considerable detail about time and rate of planting, suitable seeds for certain types of soil, and other similar information.

Examples in figure 7 show other uses made of magazines, bulletins, and pamphlets to give seed information to farmers.

The Farm Bureau Services, Inc., of Columbus, Ohio, sponsors a magnifying glass inspection demonstration program to show farmers what to look for and how to recognize the characters that indicate the value of seed for use. To facilitate the

ADAPTATION AREAS for HYBRID CORN in PENNSYLVANIA



In the table below we list the various hybrid strains (from our list of hybrids that we distribute) for adaptation and productive qualities, within the designated area as the map would indicate.

Directions: Locate your farm on the map. This will give you the adaptation area. You will find the adapted hybrids we recommend under the *latest safe dates* for their planting. Remember, adaptation is more important than yield records.

FOR EAR CORN

The first column gives the number of the various areas. The hybrids adapted to each area are listed under the *latest safe date* in soils of *average productiveness* for that area. In fertile, well-manured soils and with fertilizer, *five extra days* may be allowed. In the poorer

soils the same hybrid should be planted five or more days earlier than specified.

Iowa 939, W. 17 and even U. S. 65 are definitely early for areas 1 and 2. In these areas they qualify best for late planting or where an early harvest is desired.

Adaptation Area No.	Before May 5	May 5 to 10	May 10 to 15	May 15 to 20	May 20 to 25	May 25 to 30	May 30 to June 5
1				U. S. 13	U. S. 44	U. S. 52 U. S. 65	W. 17 IA. 939
2		U. S. 13	U. S. 44	U. S. 52	U. S. 65 W. 17	IA. 939	
3	U. S. 13	U. S. 44	U. S. 52	U. S. 65 W. 17	IA. 939	K. 35	
4	U. S. 44	U. S. 52	U. S. 65	W. 17 IA. 939	K. 35	IA. 931	
5	U. S. 65 W. 17	IA. 939	K. 35	IA. 931	K. 23		
6	IA. 939	K. 35	IA. 931	K. 23	M. 15		
7	K. 35	IA. 931	K. 23	M. 15			
8	IA. 931	K. 23	M. 15				
9	IA. 931	K. 23	M. 15				
10	K. 23	M. 15					
11	M. 15						
12	M. 15						

FOR SILAGE

We recommend hybrid corn for silage. Our hybrids here listed and latest dates for planting emphasize both quantity and quality. The intelligent grower wants a high per cent. of corn ears and leaves which will yield the most total dry matter for the area in which he is located. By late planting or in areas of short seasons either quality or size *must* be sacrificed.

May 1 to 10	May 10 to 20	May 20 to 30	May 30 to June 10
		U. S. 13	U. S. 44
	U. S. 13	U. S. 44	U. S. 52
U. S. 13	U. S. 44	U. S. 52	W. 17
U. S. 44	U. S. 52	W. 17	
U. S. 44	U. S. 52 W. 17	K. 35	
U. S. 52	W. 17	K. 35	
U. S. 52	W. 17	K. 35	
U. S. 52 W. 17	K. 35		
U. S. 52 W. 17	K. 35		
W. 17 K. 35	K. 23		
K. 35	K. 23		
K. 23			

A Complete Fertilizer. In all areas of shorter season and where late planting is unavoidable, the use of fertilizers will advance maturity and increase yields. About 200 pounds per acre of 2-8-5 or 3-12-6 are commonly recommended.

Figure 7. - Examples of information prepared and presented to seed service patrons of regional cooperatives.

FOR FIELD CROPS

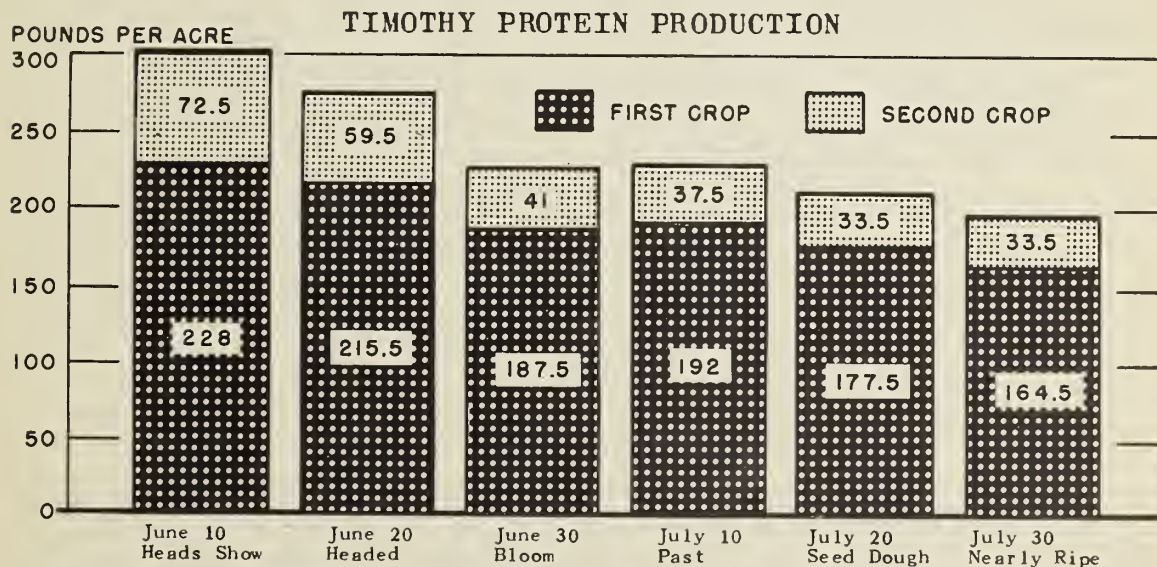
CROP	SOIL & FERTILITY CONDITIONS	GRADE	LBS. PER ACRE
Corn	Manured Heavily	0-20-0	200-500
	Manured Lightly	4-12-4	250-600
	Not Manured	5-10-5	250-800
Oats, Barley, Wheat, Rye	After manured or heavily fertilized crop	5-8-7	250-800
		0-20-0	200-300
	Not after manured or heavily fertilized crop	3-12-6	200-300
Clover and Timothy	First year of mowing	4-12-8	200-300
		4-12-4	200-300
Timothy	Manured	0-20-0	200-400
	Not Manured	7-7-7	400-600
		5-10-5	400-600
Alfalfa or Ladino Clover	August seeding after heavily fertilized crop		0-14-7 or 0-20-0
	August seeding not after heavily fertilized crop		5-8-7
			4-12-8
	Top dressing established stands		0-14-7
Sudan Grass, Millet	Manured	0-20-0	200-300
	Not Manured	5-10-5	300-500
		No Fertilizer	
Soybeans†	After manured or well fertilized crop	or 0-20-0	200
	Not after manured or well fertilized crop	0-14-7	200-500
		5-10-10	1500-1800
Potatoes	Not Manured	5-8-7	1500-2000
		4-12-8	1500-2000
		5-10-5	1500-1800
Pastures, Permanent	Manured	0-20-0	200-300
	Not Manured	5-10-5	400-1000§
		7-7-7	400-1000§

†Annually or twice the amount every other year.

‡If the soybean crop is to be fertilized it is safer to apply the material before seeding rather than in the drill.

§The higher rate to a comparatively small area of good pasture sod (One acre to six cows) primarily to furnish early spring grazing.

Source: Cooperative G.L.F. Exchange information bulletin, entitled, "1944, a Year to Grow More Feed."



Source: Taken from Eastern States Cooperator Publication of Eastern States Farmers Exchange, Springfield, Mass.

Figures in this chart are from experiments at University of New Hampshire.

Figure 7. - Continued

demonstration members are given small magnifying glasses, mostly for use in the examination of grass, legume, and other small seed lots.

The seed department of the Farm Bureau Services, Inc., of Lansing, Michigan, uses a mimeographed news letter as a method for passing on information of interest to local seed purchasing services. These letters contain summaries of research conducted by the Michigan State College, as well as other helpful information.

Attention is called to the fact that informational services are provided by associations other than those mentioned above. Space does not permit specific reference to all of them. It should also be pointed out that the examples shown illustrate only one phase or one method of presenting factual information regarding various kinds of seed for the different conditions prevailing, and regarding their usage for maximum results.

REGIONALS SEED PROCUREMENT OPERATIONS

Volume of business is a prime factor contributing to the effectiveness of the second service performed by regionals, that of procuring seeds. A regional serving 40 or 50 local cooperatives, or several hundred as in the case of the largest regionals, should be assured sufficient volume to give efficient operation not only from the standpoint of cost but to assure quality seed. Regionals have the best opportunity to get seed with the highest utility value at lower costs because: (1) they may employ especially trained men for the job; (2) they are in a better position to make selections from the most desirable producing areas or even fields; (3) they may economically practice contract production; (4) they have opportunity to effect economies in operations not possible if each local operates independently.

Acquiring the best seed for use cannot be assured solely on the basis of the specifications required by the Federal Seed Act or by State seed laws. This is not a criticism of those laws as they are of great value to buyers of seed. For instance, the Federal Seed Act requirement that seed handled in interstate trade must be accompanied by a written declaration of kind, variety, type, origin, and use for which the seed is intended is especially helpful to buyers in appraising the value of a given lot of seed. Also, the requirements as to purity analysis, germination, percentage of hard seed, weed seed, etc., are equally important.

However, helpful as these requirements are, the experiences of regional cooperatives indicate that additional information may be necessary to get seed with maximum utility value for specific environments and conditions. Inherent characteristics, such as resistance to certain diseases, cold, and dry weather are developed under conditions where the seeds are grown. Therefore, to be certain of getting the best seed, regionals make it a policy to know the conditions under which the seed was produced.

Care Exercised in Seed Selection

Red clover may be used as an example to show the importance of having available all possible information in the matter of seed selection. Southern States Cooperative, Richmond, Virginia, furnishes a seed purchasing service to members in Virginia, West Virginia, Maryland, and Delaware. In this area there is a disease known as southern anthracnose very destructive to clover plants unless they are resistant to it. Experiment stations' tests showed that red clover produced for a period of 4 or 5 years

in areas where anthracnose is prevalent gains in resistance and is able to withstand the ravages of the disease. Therefore, it is not enough to know that a particular lot of red clover seed was produced in Virginia, Maryland, or Ohio, which would be the only indication of origin on the tag. It is very important to know that it came from plants grown for several generations in the anthracnose belt. The map, figure 8, used to define this area, was prepared by Southern States Cooperative for use in its January 1943 issue of the Southern States Patron. Southern States Cooperative selects red clover seed on the basis of the number of years of origin in a given locality.

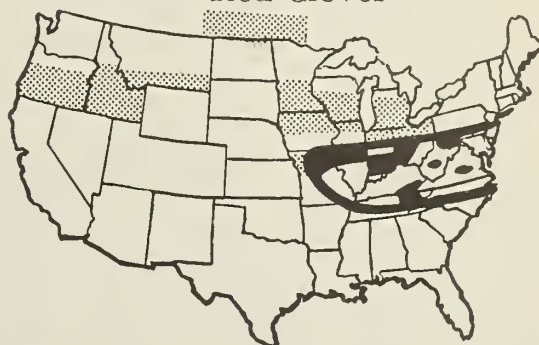
As another example, the Farm Bureau Services, Inc., of Columbus, Ohio, and some other regionals select seed potatoes on the basis of field inspections of growing crops in heavy producing areas. This enables them to get seed potatoes which carry a minimum of the seed-borne diseases evidenced only on the growing plants.

Regionals exercise considerable care in the selection of seed to provide that most suited to the needs of their trade territory. Such exact methods of seed selection, so important for utility value, would not be practical for local cooperatives not having contact or not affiliated with a regional service. They are further evidence of how the regionals can help the locals make greater contribution to the farmers' crop production (figure 9).

Contracted Seed Production

Contracting for certain kinds of seed production is practiced by the larger regionals to get seed from production directly supervised by them. The type of contract most commonly used provides that the regional furnish stock seed and supervise production practices. Both of these provisions are important. In providing stock seed the regional can supply the best strains and know the inherent character of the seed produced by the contract grower. Also, because growers' production is supervised, occurrences of disease may be observed and in some cases controlled, and other cultural practices which may contribute to seed utility value may be effected.

Red Clover



The kind we must have

The kind we don't want

Alfalfa



The kind we must have

The kind we don't want

Source: From Southern States Cooperative's publication "Southern States Patron"

Figure 8. - Graphic illustration of seed selection methods of Southern States Cooperative, Inc., Richmond, Virginia.



Figure 9. - *Examples
of crop production
results from proper
seed selection.*



Therefore, contracting under the terms generally used by the large cooperative regionals provides a method of procuring the best seed value available. In actual practice this method is limited to those crops generally expected to produce a seed when grown for that purpose, such as corn (both hybrid and open pollinated), oats, wheat, barley, soybeans, seed potatoes, sweet corn, and various kinds of vegetable seed.

Production contracts used by the Eastern States Farmers' Exchange, in procuring seed potatoes for its membership make possible use of scientific methods. This program embraces the following considerations. The variety of seed selected must be adapted to members' needs. It should be true to variety by inheritance, free of varietal mixtures, and resistant to disease. It must be in sound condition, accurately graded, securely packaged, and obtainable at reasonable cost.

The control of soil-borne and seed-borne disease is vital for maximum seed value. Eastern States attempts control of disease by sanitation, cultural practices, and by a 4-year cycle of progeny production. On the farms used exclusively for their seed potato production and storage, a program of crop rotation, seed treatment, and disinfecting the premises and equipment is rigorously followed. Disease is controlled by cultural practices such as spraying and dusting, fertilization, cultivation, roguing, and inspection. Disease control by Eastern State's cycle of progeny production involves a 4-year, five-step program providing its own seed for progressive annual renewals preceding each year's distribution of seed potatoes (figure 10).

The above contract production program is carried on in Aroostook County, Maine. Down in Florida, a test plot is used by Eastern States to record each year the progress of disease in seed potatoes obtained from three different sources. Those used are tubers of single-stalk hills of elite seed, tubers of stock seed not produced in contracted acreage, and seed produced by each contract grower, all identified as to fields in which they were grown. This project means that only seed meeting Eastern States' standard will be distributed to members as Eastern States Seed Potatoes.

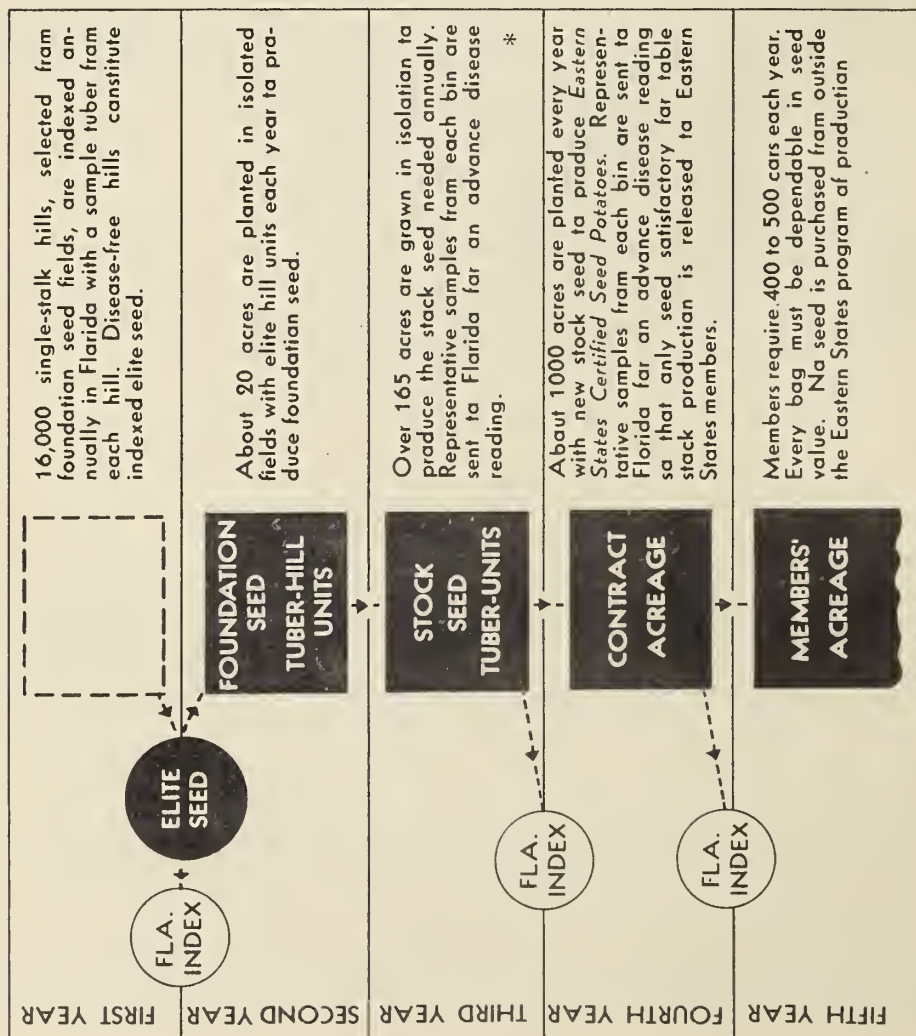
The above is an outstanding example of seed procurement for maximum seed usefulness and is practical only at the regional level. It is fine evidence, also, of the use of a scientifically controlled but practical program aimed at better production and lower costs for the benefit of farmer members of local cooperative seed purchasing service.

Classes of Seed Most Frequently Purchased

The natural environment and type of farming generally prevailing in a given region will, of course, largely determine the seeds purchased by regionals. Varieties and strains of seed may be completely different between regions but the same classes of seed may be handled by several or all associations.

Legume seed is a class purchased by nearly all regionals. Mississippi Federated Cooperative and the Farmers Marketing and Exchange Association of Montgomery, Alabama, purchase peas, vetch, cowpeas, and other legumes used for winter cover crops. Midland Cooperative Wholesale, Michigan Farm Bureau Service, G.L.F., or Eastern States will have larger legume purchases of the winter hardy strains of alfalfa and clovers. Thus, the varieties and strains vary, but legumes as a class of seed are purchased by all regionals.

CHART OF FOUR-YEAR, FIVE-STEP PROGRAM



In producing Eastern States seed potatoes, DISEASE IS CONTROLLED by sanitation . . . on farms used exclusively for Exchange production and storage where a program of crop rotation, seed treatment, and disinfection of premises and equipment is rigorously followed. DISEASE IS CONTROLLED . . . by cultural practices as spraying and dusting, fertilization and cultivation, roguing and inspection. And finally, DISEASE IS CONTROLLED . . . by the Eastern States cycle of progeny production, a four-year, five-step program providing its own seed for progressive annual renewal and preceding each year's distribution of Eastern States seed potatoes.

This careful, scientific program controls . . . within reasonable tolerance . . . soil-borne and seed-borne diseases; and defects or blemishes that detract from appearance and vigor of the seed.

* This stock seed is for the production of certified seed when available in excess of the requirements of Exchange contract growers.

Figure 10. - Illustration of disease-control methods of Southern States Cooperative, Inc., Richmond, Virginia.

DISEASE CONTROL IS VITAL . . .

Nonlegumes and grasses are also handled by practically all regionals. Again, the kinds of grasses or grass mixtures vary widely between regions, as does the use of such nonlegumes as rapes, millets, and sudan grass.

Farmers usually obtain seed from their own or their neighbors grain crops such as wheat, oats, barley, rape, grain, and forage sorghums rather than through their cooperative. However, one or more kinds of grain crop seed are handled almost universally for those farmers who wish to purchase pure strains and varieties, or who wish to get a start of some new variety.

Hybrid corn is considered separate from other grains. Although not purchased by all regionals, at the present rate of increase in use outside the main corn belt, it appears to be only a matter of a few years until hybrid corn seed will be an important item for all regionals. It is now handled by 17 of the 23 regionals studied and constitutes an important volume item with most of them.

Vegetable seeds are purchased by 9 of the 23 regional associations. Although purchased by more farmers than any other single class of seed, in some respects they are the most difficult for cooperatives to handle. First, it is harder to be positive of value-in-use of each of the numerous varieties and strains. Second, total volume is small, varieties are numerous, and vitality for certain varieties is low and hard to maintain in storage. Vegetable seed is usually the last purchasing service regionals attempt to develop, at least on the high plane of cooperative service maintained for the other classes. However, Eastern States, G.L.F., and Southern States appear to be setting a pattern for methods of providing an outstanding vegetable seed purchasing service. Their experience, together with that of the vegetable seed marketing service of the Washington Cooperative Egg and Poultry Association and other cooperatives purchasing vegetable seed, will no doubt be very helpful as a basis for considerable expansion and improvement of the cooperative purchasing service for this class of seed.

Seed potatoes are purchased by six of the regionals studied. Eastern States and Ohio Farm Bureau Services handle well over 100 carloads of seed potatoes each annually.

Three of the regionals in the South purchase cottonseed for members, particularly improved varieties from the standpoint of production and desirable staple length.

Dollar volume was not available from each regional on each class of seed. However, the total volume of seed purchases by associations for the crop year 1942-43 varied from a few thousand dollars in the case of some just starting their service to better than 1-3/4 million dollars for the three largest regional services.

Processing Makes Procurement Service More Effective

Processing is rarely considered practical for local associations, particularly where the seed service does not include marketing, because volume of seed purchased for farmers at the local level is too small to justify processing equipment and facilities. The same may be true for some of the smaller regional seed services. Therefore, from the standpoint of seed purchasing service, processing is strictly a regional operation for those having sufficient seed volume. It helps their service

to the local association by (1) improving qualities from the standpoint of use in crop production, (2) lowering the costs to farmers, and (3) providing experience helpful in selecting seed having maximum utility value.

It is still true that "if you want to be sure a job is done a certain way for a specified purpose - do it yourself," and this might well apply to cooperative seed processing. Seed usually sold by growers varies in utility value, ranging from lots so poor that processing is not considered advisable to lots that need very little processing. However, it would be an unusual case where the quality of unprocessed seed could not be improved by cleaning, treating, grading, scarifying, drying, or packaging, or by a combination of any of these processing operations in a modern cooperative plant such as shown on the cover page.

Such processing takes out inert material, the immature or shriveled elements, and the weed seed. Treatments known to be practical for controlling seed-borne or soil-borne disease offer great opportunity to build seed utility values. Scarifying or the "Kem-Fee" chemical process developed and patented by Cooperative G.L.F. is a method of reducing the percentage of hard seed and increasing germination of legume seed. Grading is often thought of as a processing operation for seed corn only, but from the standpoint of uniform stands or rates of planting it may be equally important for other seed where uniformity of size is a factor affecting rate of planting. Longevity of life or vitality is closely related to moisture content. Therefore, drying seed, particularly seed corn, may be necessary to lengthen the period of safe storage. Packaging is another service usually performed by the processor. Properly done in strong, safe, and standard-size packages, it is of considerable importance in preserving utility value.

By doing their own processing, regionals have greater assurance of the usefulness of the seed because they have more information on origin and the characteristics of each seed lot. Cooperative processing also provides another opportunity to lower seed costs. Any savings on processing operations are reflected to local cooperatives and on to farmers in lower seed prices, in patronage refunds, or in both of these ways.

Processing also makes possible an across-the-board seed purchasing service - that is, unprocessed seed is procured directly from producers or country assemblers, then is processed and distributed cooperatively to farmers. Furthermore, processing experience provides excellent training for men who must select seed for their respective regionals' territory. Men who know from experience how rough seed will process out from the standpoint of its utility value are usually best able to select the rough lots that will turn out the best seed for use in their territory.

Some indications of the importance of seed processing to the operations of a regional's service may be gotten from the data shown in table 3. While it is recognized that processing in itself does not wholly account for the higher average number of patrons and dollar seed volume, nevertheless, it is a method used to get better seed values and larger savings. Greater use of those regionals seed service doing their own processing is evidence that it is an effective method.

REGIONAL SEED DEPARTMENT OPERATING ECONOMIES

Operating the seed purchasing department as efficiently and economically as possible is the last of the three services regionals perform in this field. If the cooperative is set up so the seed service is one of several departments in the organization, the

cost of such things as field service, educational and informational programs, plant and office supplies and equipment, and general management can be spread over the various departments. This results in economies impossible if the seed service is operated as a separate enterprise, especially in view of the fact that seed purchasing is seasonal.

Table 3. - Average number of seed patrons, members, dollar seed volume, and ration of patrons to members of 23 regional seed purchasing services, 1942-43.

Type of regional seed service	Number of regionals	Average number		Average dollar seed volume	Ratio of average patrons to average members
		Seed patrons ¹	Farmer members ²		
Regionals processing seed.....	10	31,300	72,900	\$1,003,225	1 to 2.33
Regionals which do not process seed.....	13	12,462	63,204	158,214	1 to 5.07
All.....	23	20,652	67,419	\$525,610	1 to 3.27

¹Seed patrons means farmer seed patrons of the local cooperatives that provide a seed purchasing service affiliated with or units of the respective regionals. (Not all locals served by the respective regionals provide seed purchasing service.)

²Farmer members means the total farmer membership of all local cooperatives affiliated with or units of the respective regional.

Source: Compiled from the records of the regional cooperatives.

Regionals with a large volume of farm supplies besides seed may find operating their own truck transportation a method of achieving operating economies or they may ship by rail in mixed carloads to the affiliated locals. In either of those cases the cost of transportation would be less. For instance, the savings in transportation costs on a mixed carload of feed and seed over the less-than-carload freight rate are substantial. If the regional operates its own trucks, it can provide a transportation service to local member associations at costs below the freight rate for less-than-carload lots.

Most of the 23 regionals included in this study have sufficient seed volume to justify the employment of highly trained seedsmen to operate their seed service departments. Probably no single factor is as important to the value of the service, and to its economical operation, as the men who are employed to operate it. Several of the associations studied considered the management of the seed department of such importance that they hired the best man they could find for the job, then started their program under his direction. As the service developed and volume increased, specialists in seed processing, procurement, distribution, and research were employed and given responsibility in their particular fields.

COOPERATION BETWEEN COOPERATIVE SEED SERVICES

One objective of cooperatives purchasing and marketing seed is to perform all the services necessary between the producer of seed and the farmer who consumes or uses it, in other words, to provide a complete cooperative service from producer to

consumer. Achieving this in the most efficient and economical manner in many instances calls for cooperation between cooperatives. In cases where the locals buy seed from one farmer and distribute it to another in the same community, no cooperation among associations is necessary.

However, the most of the seed purchased by the local comes from other producing areas, sometimes thousands of miles away, or it may even be imported. For this procurement service, local cooperatives work with their regional association.

As locals work together through their regional association, so do the regionals on the occasions when it is to their mutual interest. Regionals may cooperate in their respective procurement programs or they may work closely with local or regional seed marketing services.

Cooperation between locals and regionals has been discussed under present status of cooperatives purchasing seed. Therefore, the following discussion will deal with the other phases of the subject.

COOPERATION BETWEEN REGIONALS PURCHASING SEED

Regionals find it to their mutual interest to work together, particularly in some phases of their respective procurement operations. In order to get such small seed as alfalfa, clovers, and grasses direct from farmers, local cooperatives or others in the Midwest and West, regionals in the East must send their own personnel to these areas of production. Obviously, for each to send representatives would be an unnecessary duplication of expense if a workable arrangement can be made so that one service can take care of the needs of several regionals. Such an arrangement has been made by: Indiana Farm Bureau Cooperative, Indianapolis, Indiana; Farmers Cooperative Exchange, Raleigh, North Carolina; Farm Bureau Cooperative Association, Columbus, Ohio; Pennsylvania Farm Bureau Cooperative Association, Harrisburg, Pennsylvania; Ohio Farmers Grain and Supply Association, Fostoria, Ohio; Wisconsin Cooperative Farm Supply Company, Madison, Wisconsin; Southern States Cooperative, Richmond Virginia; and Cooperative G.L.F. Mills of Buffalo, New York. The G.L.F. Mills' big Fort Wayne, Indiana, processing plant and its personnel are used primarily for the service of the entire group.

Another outstanding example of cooperation between regionals is the Atlantic Seed Stock Cooperative, organized in the early part of 1944. Its primary objective is to produce foundation seed corn adapted to conditions and environments of the East and for use in the production of double-cross hybrids by seed purchasing departments of the following member regional associations: Pennsylvania Farm Bureau Cooperative Association, Southern States Cooperative, Eastern States Farmers' Exchange, and Cooperative G.L.F. Exchange. The cooperative efforts of these regional associations are expected to have an early and important effect on the future of hybrid corn-growing along the whole Atlantic seaboard.

The Federated Seed Service is the overhead organization resulting from various cooperatives grouping themselves together to collectively support national seed legislation. This organization has actively supported the Gooding-Ketchum Act requiring the staining of imported seed so that the commercial seed industry and farmers might more accurately know the origin of seed. It was active in the development and support of the Coffee Bill which became the Federal Seed Act. This Act is still further help

toward making it necessary to give all the "truth" about seed to those purchasing it. More recently Federated Seed Service, representing the cooperatives, has been working closely with the Seed Council of North America in the effort to develop uniform State seed laws that will be practical and useful to the producing farmer, the seed processor, and the consuming farmer.

COOPERATION BETWEEN THOSE MARKETING AND PURCHASING SEED

In the matter of price interests, seed marketing and purchasing associations are at opposite poles. Marketing services seek the highest price possible for farmers producing and marketing seeds, whereas purchasing services are interested in a low price, quality considered, for the farmer purchasing and using seeds.

Yet associations providing each type of service have a mutual interest in the matter of high quality seed. To marketing associations, quality means opportunity for a better price. To those purchasing seed, quality means opportunity for better service.

A manager of one of the large regional seed purchasing departments made a statement about cooperating with marketing associations that is characteristic of most regional policy. He said, "Other things being equal, it is our policy to work with marketing cooperatives for two reasons. First, we can buy 'lots' of seed from them with greater certainty of the location in which the seed was grown and the identity of the seed, and with greater assurance that it will meet specifications and description more closely than that purchased through commercial channels, and second, we want to give them every bit of support possible."

Consequently, most regionals purchasing seed deal whenever practical with marketing cooperatives. The extent of such dealings will no doubt increase as each group further concentrates their respective efforts toward better quality seed.

CONDITIONS FOR STABILITY OF COOPERATIVE SEED PURCHASING

The commercial seed industry has had a varied history of financial successes and failures. The industry has always had some men whose integrity was questionable. Within the commercial seed industry have been men who existed in proportion to their ability to misrepresent. There have been others who existed in proportion to their ability to speculate. A third group has been the most stable. They have made their progress by using principles of sound merchandizing and plant breeding practices. The cooperatives have been a leader among this third group.

There are, of course, a number of factors that contribute to the stability of cooperative business enterprise. The most essential are good membership relations, sound financing, sound credit, adequate margins, adequate volume of business, adequate facilities and equipment, and avoidance of unnecessary risks or speculation. Since seed purchasing services are nearly always operated as side lines or departments of the cooperative organizations providing them, the policies important to the stability of the cooperative organization as a whole are equally important to each department. On the other hand, all departments and commodities present separate problems affecting the stability of the association. A seed purchasing service operated as a side line or department is no exception. In fact, one of the reasons often given by the management of cooperatives for not providing their memberships with a seed purchasing service is that the seed business is too risky, it lacks stability. Therefore, the

purpose of the following discussion will be to set forth evidences of stability and methods used to insure maximum stability for seed purchasing services, particularly at the regional level of operation.

The data shown in table 4 provide evidence that members are using the seed services of their cooperatives more and more as the services grow older. The regionals providing seed services prior to 1931 now have much the larger average dollar seed volume and a larger average number of farmers using the service. Of the six operating prior to 1931, five started their seed purchasing service before 1924. These five, with more than 20 years' experience in the seed business, each showed a large seed volume in 1942-43. The associations under discussion are Cooperative G.L.F. Exchange, Ithaca, New York; Eastern States Farmers Exchange, Springfield, Massachusetts; Southern States Cooperative, Richmond, Virginia; Farm Bureau Services, Inc., Lansing, Michigan; and Mississippi Federated Cooperative, Jackson, Mississippi. The fact that for more than 20 years volume of business and quality of service have grown and that these associations are now among the largest handlers of seed in the United States is strong evidence of the stability of their seed purchasing services.

Table 4. - Average number of seed patrons and dollar seed volume of four specified age groups of regional seed purchasing services, 1942-43

Age of regional seed service	Number of regionals	Estimated number of seed patrons ¹	Average dollar seed volume
Started prior to 1931.....	6	42,000	\$1,469,873
Started 1931 to 1936.....	6	20,500	392,184
Started 1936 to 1941.....	4	10,250	128,988
Started in 1941 or 1942.....	7	8,429	57,248
All.....	23	20,652	\$525,610

¹Seed patrons are managers' estimates of the farmers purchasing seed from local cooperatives affiliated with or from units of the respective regional cooperatives.

Source: Compiled from records of the regional cooperatives.

In view of the outstanding progress of the older associations that have pioneered in using principles of plant breeding and sound merchandising as the basis for their operations, it seems important to know the conditions their managers consider most important to their stability. Expressed from that viewpoint, these managers list the following conditions:

1. Cooperative distribution system;
2. Highest integrity and aggressiveness for seed utility value on the part of the personnel;
3. Procurement policies;
4. Price policies;
5. Facilities and equipment; and
6. Personnel.

The foregoing may not be listed in the order of their importance, as there were differences of opinion as to their weight. However, there was unanimous agreement that all the above conditions were important to the stability of seed purchasing operations.

COOPERATIVE DISTRIBUTION

Managers of regional seed departments have an important advantage over the managers of private seed organizations. Their cooperative system of distribution to their own membership leads to closer relationship with the patrons using the service. Managers of seed departments can use this relationship most effectively by integrating their service with other services of the regional. Thus, they can take advantage of more opportunities to keep patrons aware of their seed service. Accordingly, patrons are more interested, their patronage is more secure, and managers can make more accurate estimates of seed demand because of the more intimate relationships between employees and patrons existing within the cooperative system of distribution.

INTEGRITY AND AGGRESSIVENESS FOR SEED UTILITY VALUE

The volume of business is determined by the possible number of patrons and their needs. Patronage will be determined primarily by the value of the seed service to those who can use it. Dependable patronage is essential to the stability of the service. Therefore, integrity and aggressiveness of the personnel in procuring the best seed values, measured in terms of use in farm production enterprises, is of paramount importance to the stability of cooperative seed purchasing services.

Cooperatives always have been leaders in offering guaranteed seed. The commercial seed industry, with the exception of the cooperatives, generally have nonwarranty statements on price lists and seed tags similar to the following: "We give no warranty, expressed or implied, as to the description, quality, productiveness, or any other matter of any seed we send out and will not be in any case responsible for the crop." However, many cooperatives, particularly those regionals doing their own seed processing, and their affiliated local cooperatives, have a seed guarantee similar to that given by the Farmers Cooperative Exchange of Raleigh, North Carolina. See figure 11. This willingness to guarantee seed to the extent of the purchase price is further evidence of the integrity of the regional cooperative seed purchasing services and is one factor contributing to their stability.

PROCUREMENT POLICIES

Seed production and seed use are seasonal. Usually a given kind of seed inventory turns only once a year, but sometimes turns twice a year. The regional cooperatives must have a substantial part of their seed inventories well in advance of the planting season. Furthermore, climate and soil conditions prevailing at the usual time of planting may affect demand for various kinds of seed in a given territory. These conditions add risk to the job of procuring inventories that will not result in an undesirable seed carry-over. Thus, the cooperatives use operating practices that minimize this risk as much as possible.

One practice generally used, by both the regional and member locals, is to encourage farmers to estimate their seed requirements well in advance of the planting season. Cooperative G.L.F. Exchange furnishes local cooperatives with a chart on which each farmer is asked to list an estimate of his seed, inoculants, and fertilizer needs as shown in figure 12. This chart also provides a handy reference on weights per bushel and rates of seeding. The information furnished by the farmer helps provide the local cooperative with a sound basis for booking an order for various kinds of G.L.F. seeds.

All regionals maintain permanent records of purchases made by individual farmers from the locals and of those made by the locals from the regional, as a basis for estimating quantities of seed to be procured.

Managers of regional seed departments expressed the opinion that the use of operating

practices mentioned above, such as keeping historical records of purchases, booking orders well in advance of planting need, and knowing seed use trends for the territory served, will together furnish a reasonably sound basis for procuring seed inventories.

Using the foregoing as a basis for estimating demand, cooperatives may further protect themselves against undesirable 'carry-over' by being conservative in their early seed purchase commitments. In practice, the proportions purchased ahead of the time of actual need will depend on the kind of seed, supply and demand factors for each kind, and the adequacy of facilities and equipment. The proportions will range from 50 percent of indicated demand on up to almost the total supplied. The main concern is to avoid an undesirable carry-over. A carry-over of some kinds of seed and seed stocks, under certain conditions, is considered desirable. When demand is definitely determined, the early inventories are supplemented by additional purchases so as to meet total requirements.

PRICE POLICIES

The matter of pricing should be considered a factor in the stability of cooperative seed purchasing services. Managers are unanimous on the point that the price policy should be consistent - something the seed patrons may depend on. The usual price policy is based on current replacement costs. For the local cooperative, this policy means replacement costs, f.o.b. its warehouse, plus its retail margin. For the regional, it means either current replacement costs, f.o.b. the warehouse, plus operating margins; or in the case of regionals that process their own seed, current replacement costs, f.o.b. processing plant, plus processing charges, cost of bags and tags, and handling margins.

FCX Seed Guarantee

"FCX seeds are guaranteed to the full extent of the purchase price to be as represented in variety, origin, purity, germination, and weed content. Patrons may return any seed that is not thoroughly satisfactory. After the seed is sown the FCX Seed Service will reimburse the Patron if there is definite evidence that the seed was not of high quality, but will in no case be liable for more than the purchase price of the seed."

Compare this guarantee with the usual non-warranty used by the seed trade. Where, in fact, have you ever read any GUARANTEE on seed? Cooperatives took the lead in guaranteeing seed.

The men responsible for getting the best seed to your farm through the cooperative purchasing program are so confident that they can do the job that they have no hesitation in making this guarantee to you. Many years of good results have proven their ability to do the job. They do not gamble with your crops.

THERE IS NO SUBSTITUTE FOR GOOD SEED

Figure 11. - *Seed guarantee of the Farmers' Cooperative Exchange, Raleigh, N. C. (Carolina Cooperator, March 1943).*

G.L.F. Selected Origin Seeds

Place Your



Order Now

Because G.L.F. Seeds have high germination, superior breeding and vitality, less seed is required per acre.		Is Your Name on the List Yet?	DATE ORDER	PASTURE MIXTURE	MEDIUM CLOVER	MAMMOTH CLOVER	ALSIKE	INOCULANT	ALFALFA	SWEET CLOVER	TIMOTHY	TIMOTHY & ALSIKE	CORN FOR GRAIN	CORN FOR SILAGE	OATS	BARLEY	LIME	SUPER. PHOSPHATE	MIXED FERTILIZER	MISC.
NAME OF SEED	WL. Per Bu.	SEEDING RATES																		
Alfalfa and Sweet Clover	60 lbs.	12 to 20 lbs. per acre. Use Alfalfa inoculant.																		
Barley	48 lbs.	6 pecks to 2 bu. per acre.																		
Buckwheat	48 lbs.	2 to 5 pecks per acre.																		
Clovers	60 lbs.	8 to 10 lbs. per acre with 8 to 12 lbs. timothy or 12 to 14 lbs. Mammoth Red or 4 to 6 lbs. with mixtures or 8 to 12 lbs. alone, lbs. in mixtures or 10 or 12 lbs. alone. Wild White or Ladino! 1 to 2 lbs. per acre. Use Clover inoculant.																		
Cabbage		1 lb. produces plants for 2 to 3 acres.																		
Corn (field)	56 lbs.	For silage: 6 to 10 qts. per acre. Husking corn: 5 to 7 qts. per acre drilled in 28-in. rows.																		
Timothy	45 lbs.	12 to 14 lbs. per acre, alone. 6 to 10 lbs. per acre with clover.																		
Vetch	60 lbs.	50 to 60 lbs. per acre, alone. 15 to 30 lbs. per acre with rye or oats.																		
Wheat	60 lbs.	Sow in September 2 bu. per acre. In Spring, 1 1/2 to 2 bu. per acre.																		

Figure 12. - Order-listing chart used by G.L.F. seed services.

The only exception to the foregoing price policy was the pool price arrangement of the Eastern States Farmers Exchange, Springfield, Massachusetts. This cooperative has developed a pool price system for seed potatoes and field crop seed. The seed potato pool price is based on the price of No. 1 Green Mountain table stock potatoes at shipping points in Aroostook County, Maine, which is Eastern States' contract seed potato production area. Actually, the pool price is based on the average price of No. 1 Green Mountain table stock for the months of October, November, December, January, and February. In placing advance orders for Eastern States seed potatoes, members have the option of the pool price or the actual Exchange price in effect at the time of shipment. This pooling method of pricing seed potatoes appears to be very popular with Eastern States' patrons.

The pool price of field crop seed is established by averaging the Eastern States prices for the months of October, November, December, and January. As in the case of seed potato patrons, buyers of field crop seed can book their orders on the basis of pool prices or at the price prevailing when the orders are shipped.

As a general rule, regionals that process their seed necessarily carry inventories for a somewhat longer time than other regionals. Managers following the foregoing cooperative practices are not particularly worried about price risks on inventories or carry-over. It appears that over a period of years the risk involved is reasonable and adequately covered by the usual competitive gross charges made by the commercial seed industry for the services.

FACILITIES AND EQUIPMENT

Seeds may get too hot, too cold, too wet, or too dry. They may receive mechanical, rodent, or insect injury. All these will lessen or destroy vitality. From this point of view, facilities and equipment which give minimum loss of vitality contribute to the stability of the seed purchasing service.

Storage does not present a particularly difficult problem where dry, well-ventilated warehouse facilities are available. But like many other operating problems, knowledge of the character and specifications of various kinds of seed is necessary to proper and successful storage operations. The stage of maturity when harvested, moisture content, and the kind of seed, must be considered in determining whether or not the seed should be accepted for processing, warehousing, and distribution; how deep the piles should be; and the kind of ventilation needed. The fact that seed is usually handled and stored in bags simplifies the problem of ventilation as compared with bulk storage. Regionals processing seed and others that have occasion to keep seed in condition for longer periods during the seasonal movement find it desirable to have warehouse facilities that are easily fumigated to control insect and rodent damage. Special rooms are usually provided for storage of valuable seed stocks, rooms which are rodent proof, easily fumigated, and in which humidity and temperature can be controlled.

Equipment for handling seed economically with a minimum of mechanical injury is also important to stability. Some kinds are much more susceptible to cracking or splitting as a result of mechanical handling than others. Here again, knowledge of seed character proves valuable in preventing excessive mechanical injury, which results in lowered vitality.

Regionals that process seed are especially interested in the kind of equipment available for this purpose. They want only the best for the jobs of cleaning, grading, treating, scarifying, drying, and packaging. Managers feel that seed processing should never be undertaken by a cooperative unless the equipment is adequate from the standpoint of turning out seed that will be of maximum value to farmers contribution to usefulness and, therefore, to stability of operations (figure 13).

SEED SERVICE PERSONNEL

The character of seeds and the fact that demand is seasonal and volume often smaller than that of most farm supplies are factors which make it impractical for most locals to employ specially trained personnel. Some locals have good seedsmen but this is usually because these men are especially interested in that part of their work rather than because they were hired as seedsmen or have been able to give seed their full attention and study since starting to work for the cooperative. The local's situation tends to affect adversely stability and its effectiveness in contributing to farm production. However, in actual practice this problem does not constitute a serious handicap, provided the local cooperatives are closely affiliated with a strong cooperative regional seed purchasing service.

The personnel of the local associations find it to their advantage to depend on their regionals' personnel for the refinements that make their service more than just another place to buy seed. Therefore, the regional must have personnel who are able and willing to assume the responsibility of assisting the locals in the presentation of their seed purchasing service to the farmer, personnel well qualified to handle their particular jobs in research and information, production, procurement, processing, and distribution at the regional level.

The regional associations that do their own processing and contract for the production of some kinds of seed usually had the best personnel from the standpoint of all-round service to the local associations. They more often had specialists in the respective jobs, each of whom served as one of a team for the big job of providing a service of maximum usefulness to the farmer members of the local cooperatives. The fact that each employee was not only well trained and qualified for his job but seemed to take special pride and interest in his particular contribution to the big job is, according to the regional management, one of the most important factors contributing to excellent service and superior seed values, and, thus, to the stability of the seed purchasing service.

SUMMARY

Inherent and physical characteristics of seed greatly influence their value for specific purposes and environments. Most farmers find it difficult if not impossible to accurately appraise these characteristics, particularly the inherent ones. Often they must depend on the knowledge and integrity of various individuals including those from whom they purchase seed, for information on the seed's value for their particular environments and purposes.

When this information proves unreliable, planting inferior seed may mean much more of a loss to the farmer than the cost price of the seed. In extreme cases it means the loss of a crop from the land as well as all the work and out-of-pocket expense of preparing and planting the seed bed.



Figure 13. - Some facilities and equipment used by regional seed processing plants to insure maximum utility value in seed.

Even a conservative estimate of the over-all seed losses each year would no doubt run to hundreds of millions of dollars, if all losses were counted from use of unadapted varieties, from planting weed seed and crop mixtures, from poor germination, from plant disease that could have been minimized or prevented by inexpensive seed treatments, or from planting legume seed that had not been inoculated.

Such an estimate serves to emphasize the tremendous importance of seed purchasing to farmers. Furthermore, it serves to emphasize the responsibilities and opportunities for service by cooperatives and others who provide seed purchasing services.

As a matter of fact, the farmers began choosing cooperatives to handle their seed business about the time of the first World War because of the unsatisfactory service they were getting elsewhere. Some seed firms were doing such things as (1) selling varieties not adapted to environments and purposes; (2) misrepresenting known facts about factors affecting seed value; and (3) unreasonable charges for the purchasing service. From the farmer's viewpoint, cooperatives have an advantage in integrity and service as well as in the cost of the service. The growth to 2,500 local cooperatives providing seed purchasing services to at least 1-1/2 million farmers in 1943 is ample evidence of how effective the cooperative method of operation has been.

Furthermore, in 1943, 30 regional cooperatives were known to be operating seed purchasing departments to help local cooperatives give better service to farmers. This help given by the regional is essential if the local service is to make the most of its opportunities, since at the local level of operation neither volume of seed purchases nor time of employees to devote to this particular service are enough to allow the specialization necessary for its maximum usefulness. On the other hand, combined seed purchases of all the locals in a regional's territory are usually large enough to justify efficient and economical regional service that includes the use of processing facilities, specialized personnel, and operating economies.

More specifically, regionals aid the seed service of the locals by giving the latest unbiased information on relative seed values for specific environments and purposes, seed usage practices, and crop cultural practices for maximum production. Regionals are in a position to use greater care in selecting seed on the basis of its inheritance and other characteristics contributing to maximum value-in-use and to make the farmers' seed purchasing service one that is cooperative from the producers to the consumer, that is, "across-the-board." In addition to distribution, their service may also include seed processing, contract production, and research. Regionals are, therefore, the means of passing on to the locals and from there to the farmer, superior seed and economies in the form of better price and patronage refunds from those operations not practical at the local level of operations.

On occasions, regionals find it to their mutual interest to cooperate with each other on some particular phase of their seed procurement program. One example is that of seven regionals cooperating with G.L.F. to procure and process seed normally coming from Midwestern and western States. Another is that of the four regionals operating in the Atlantic Coast States cooperating for the production of hybrid corn foundation stock seed. Also, nearly all regionals have a policy of cooperating with the local or regional marketing seed cooperatives whenever practical.

Cooperative policies and practices universally proven sound by experience are equally sound for seed service operations. In addition, seed service experience has shown

certain specific practices to be important to the stability of the service. Managers consider making a careful analysis of demand based on seed orders booked in advance, on past procurement records, and upon current seed use trends necessary to determine volume of seed to procure. The personnel must maintain high standards of integrity and aggressiveness in getting seed of high utility value. Price policies and the distribution system must be carefully watched. Only storage facilities, equipment, and packages that are most efficient in preserving seed vitality should be used. Giving helpful information on seed usage and crop cultural practices that insure maximum production is also important to the stability of the business.

